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| 09/893,466      | 06/29/2001  | Ajit V. Sathe        | 219.40241X00        | 5280             |

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EXAMINER

PATEL, ISHWARBHAI B

ART UNIT PAPER NUMBER

2827

DATE MAILED: 07/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

09/893,466

Applicant(s)

SATHE, AJIT V.

Examiner

Ishwar (I. B.) Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 March 2002.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 6, 11-13, 19, 24-26, 32, 37-39, 44 and 50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-10, 14-18, 20-23, 27-31, 33-36, 40-43, 45-49 and 51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of specie II, figure 6, claims 1-10, 13-23, 26-36 and 39-51, in Paper No. 5 is acknowledged. The traversal is on the ground(s) that all of the claims are related to stiffeners or arrangements including stiffeners. This is not found persuasive because different embodiments of the invention constitute different species and as mentioned on page 2 of the previous office action, the applicant is required to elect a single disclosed species for prosecution on the merits and only claims readable thereon.

The requirement is still deemed proper and is therefore made FINAL.

Further:

(a). Claims 13, 26, 39, claiming the edge stiffener are withdrawn from further consideration as the specie with edge stiffener is not elected, and

(b). Based on the preliminary election of the claims made by the applicant and further study, the claims 6, 19, 32 and 50, claiming a multi-part stiffener, which constitute a different species have also been withdrawn from the consideration.

As explained by the applicant, page 11 of the response, figures 6 and 9 are same or similar embodiments, and figure 10 is a top view of example of figure 9, figure 6 in combination with figure 9 and 10 are considered as figures representing the elected specie.

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***Drawings***

2. The drawings are objected to because figures are improperly cross hatched. All of the parts shown in section, and only those parts, must be cross hatched. The cross hatching patterns should be selected from those shown on page 600-81 of the MPEP based on the material of the part. See also 37 CFR 1.84(h)(3) and MPEP 608.02.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3,8,9,16,21,22, 29,34,35,40,42,45 and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 3, 16, 29 and 42, the use of material "metal-like, plastic-like, and ceramic-like", is vague. It is not clear whether it is metal or not, plastic or not and ceramic or not.

Regarding claim 8,21,34, it is difficult to understand clearly what the applicant is claiming. The use of the phrase "when mounted" twice is not clear.

Regarding claim 9, 22, 35, 45 and 51, it is not clear what the applicant mean by "being disposable to co-support a heat sink". The examiner understood that the stiffener supports a heat sink.

Regarding claim 40, it is not clear what the applicant mean by "a stiffener member disposable".

***Claim Rejections - 35 USC § 102***

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-5, 7-8,10,14-18,20-21,23,27-31,33-34,36,40-43,46-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Lim et al., US Patent No. 6,020,221, hereafter referred to as Lim.

Regarding claims 1, 14,27,40,46, Lim discloses a stiffener to support a substrate of an integrated circuit printed carrier package (stiffener 20, semiconductor flip chip package or die 12 and substrate 14. see figure 2-8, column 4, line 40-50).

Thin-core or coreless substrate is not given a patentable weight as the stiffener can be used for any of the substrate of a semiconductor package.

Regarding claims 2,15,28,41,47, Lim further discloses flip chip ball grid array carrier package (see figure 8, column 3, line 57-60).

Regarding claims 3,16,29,42,48, Lim further discloses the stiffener member stamped from a metallic material (column 5, line 18-24).

Regarding claims 4,17,30,43,49, Lim further discloses the stiffener being planar for mounting to a die-side major planar surface of the substrate (see figure 8).

Regarding claims 5,18,31, Lim further discloses an internal window in the stiffener (see figure 8).

Regarding claims 7,20,33, Lim further discloses the above substrate height of the stiffener equal to that of the above substrate height of the semiconductor chip (see figure 8).

Regarding claims 8,21,34, Lim further discloses top surface of the stiffener coplanar with the top surface of the semiconductor chip (see figure 8).

Regarding claims 10,22,36, Lim further discloses stiffener made of copper, which is conductive with an epoxy resin layer in-between (column 4, line 40-50, see figure 8).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 9, 22, 35, 45 and 51, as understood by the examiner, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al., US Patent No. 6,020,221, hereafter referred to as Lim, as applied to claim 1 above, and further in view of Baba, US Patent No. 6,313,521.

Regarding claims 9,22,35,45 and 51, though Lim does not disclose a heat sink, the use of heat sink is known in the art for rapidly removing the heat from the system to avoid damage to the circuit by the high temperature generated during the operation. Further, Baba discloses such heat sink on the stiffener, see Baba, figure 10. Therefore, it would have been obvious one having ordinary skill in the art at the time the invention

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was made to provide the assembly of Lim with heat sink as taught by Baba, in order to quickly remove the heat from the system to avoid damage to the circuit.

### ***Conclusion***

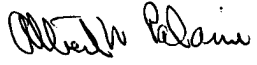
8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kalidas et al., Wensel et al., Stearns et al., Tsukamoto, Mertol, Shim et al., Suyama et al., Vongfuangfoo et al., Hoang, Mertol disclose the assembly similar to applicant's claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (703) 305 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp  
July 1, 2002

 7-1-02  
**ALBERT W. PALADINI**  
**PRIMARY EXAMINER**